

# user's guide.



Microsoft® Broadband Networking

**PCI Adapter | MN-130**



## Important

Do not plug a phone jack (RJ-11) into any Ethernet (RJ-45) port on your adapter. Doing so might damage the device. You must use twisted pair cables with RJ-45 connectors that conform to FCC standards in the device's Ethernet ports.



## Important

Ne branchez pas une ligne téléphonique dans aucuns des port de réseau (RJ45).



## Caution

For use with UL Listed, CSA and GS approved personal computers.

Not intended for use in machinery, medical, or industrial applications.

For indoor use only.



## Avertissement

N'utiliser qu'avec des composantes homologuées UL, CSA ou TUV.

Ne pas utiliser ce dispositif dans une application industrielle ou médicale.

N'utiliser qu'à l'intérieur.

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# 1 | introduction.

## Introducing the Broadband Networking PCI Adapter

Congratulations on your purchase of the Microsoft® Broadband Networking PCI Adapter. You can use the adapter to connect any personal computer with an available PCI card slot to a new or existing Ethernet network.

Networked computers let you:

- Share a broadband Internet connection.
- Share files, printers, and other peripheral devices.
- Communicate and play games with others on the network or on the Internet.

This chapter describes your PCI adapter and explains how to connect it to your network.

## Do You Have Everything You Need to Add a Computer to Your Network?

**Included in the Box:**



**Setup CD-ROM**  
Install This First!



*User's Guide*



**PCI Adapter**  
(MN-130)

**Also Required (but not included in the box):**

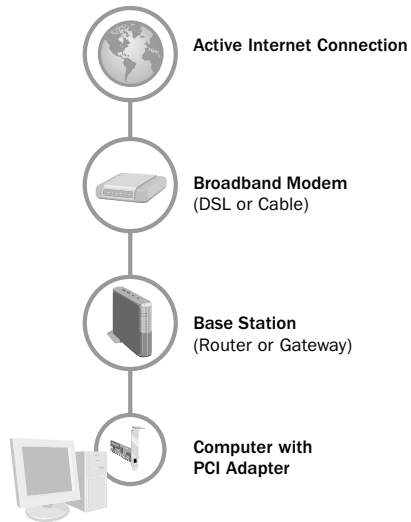
- Straight-through or crossover Ethernet cable (depending on your configuration)
- System documentation from your computer's manufacturer

**Optional:**

- A Wake-On-LAN cable (not included)  
This is necessary only if you want to use the Wake-On-LAN feature on an older computer. See "Wake-On-LAN Capability" later in this chapter for more information.

## Your Adapter and Its Connections

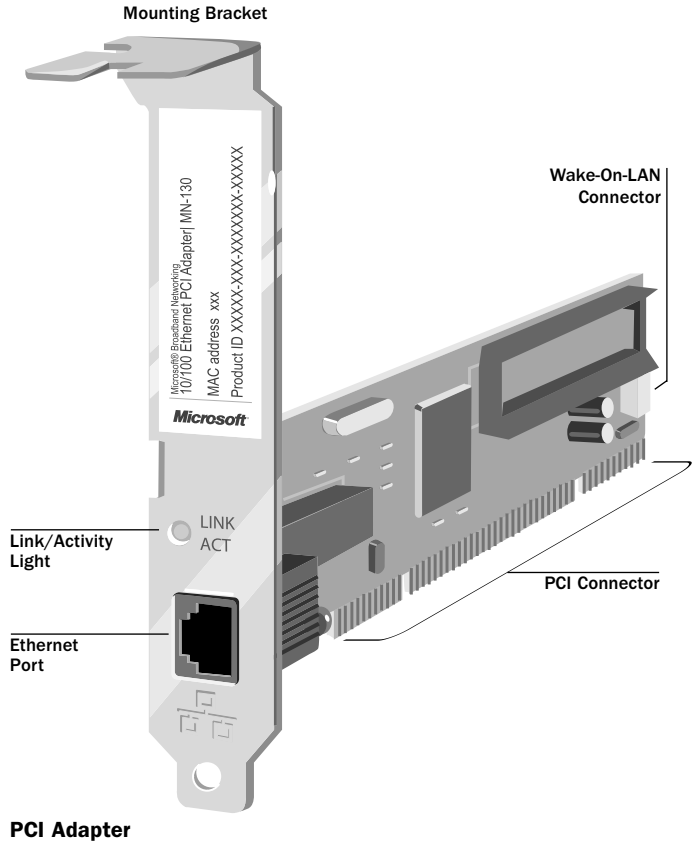
Your PCI adapter is connected from within your computer to your broadband modem or existing network by an Ethernet cable. An example network configuration is shown in the following diagram.



There are also other ways to set up your adapter. For an overview of common setup scenarios, see Chapter 2. For detailed setup instructions, see Chapter 3.

## About Your PCI Adapter

Your PCI adapter is installed in a standard PCI slot inside your computer, secured by a metal mounting bracket. The following diagram shows the layout of the adapter and the location of the Ethernet port, status indicator light, and Wake-On-LAN connector.



After you have completed the hardware and software setup of your PCI adapter, the indicator light visible through the adapter mounting bracket provides feedback about network connectivity and data-transmission speed. As shown in the following table, the light indicates one of several network states:

<b>Light Status:</b>	<b>The PCI Adapter Is:</b>
<b>Off</b>	<b>Not connected to an active network.</b>
<b>Solid orange</b>	<b>Connected to a 10base-T network running at 10 Mbps.</b>
<b>Blinking orange</b>	<b>Activity detected over the 10base-T network.</b>
<b>Solid green</b>	<b>Connected to a 100base-T network running at 100 Mbps.</b>
<b>Blinking green</b>	<b>Activity detected over the 100base-T network.</b>

## Wake-On-LAN Capability

The Microsoft Broadband Networking PCI Adapter includes a Wake-On-LAN (WOL) feature. WOL technology enables each networked computer to be “awakened” from a sleep or powered-down state, allowing it to be accessed from another computer connected to your local area network (LAN).

When WOL is enabled on a computer, the PCI adapter is powered and monitoring your network. If another computer or device sends a message to or tries to access shared files on the WOL-enabled computer, the PCI adapter tells the computer to power up its other components.

By using WOL, you can greatly reduce this computer’s power consumption while still allowing its shared files and printers to be accessed over your network.

On most computers, Wake-On-LAN capability can be enabled through the computer’s BIOS. Some computers might require a separate, 3-pin WOL cable, available at most computer stores. To determine whether your computer can take advantage of Wake-On-LAN features without an extra cable, see your computer documentation. If your computer lists PCI 2.2 compliance as one of its system features, you should not need to purchase a WOL cable.



## About Ethernet Connections

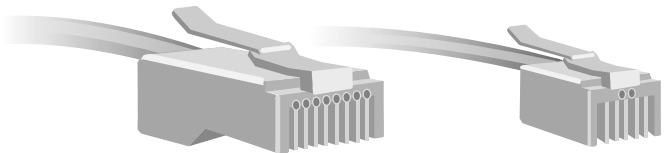
Ethernet is the most commonly used wired network protocol, with connection speeds of 10 Mbps, 100 Mbps, or higher. Your USB or notebook adapter will transmit data at either 10 or 100 Mbps. The adapter's auto-negotiation feature automatically determines the rate of your network connections and uses the fastest speed available.

As you set up your network, keep in mind that power outlets, fluorescent lights, power supplies, and coiled or extra-long cables can interfere with Ethernet transmission and also produce interference.

Use Ethernet cables to connect your adapter to devices on your network. Any Ethernet-compatible network device will have one or more Ethernet ports. Some examples of network devices are:

- Routers, gateways, or base stations, such as the Microsoft Broadband Networking Wired Base Station
- Broadband modems
- Computers with Ethernet adapters
- Ethernet switches and hubs

Network components such as your adapter are connected to one another by Ethernet cables. An Ethernet cable resembles a phone cord, but has larger connectors at each end. To determine whether a cable is an Ethernet or phone cable, you can count the number of wires or contacts visible in the connector at either end of the cable. Ethernet (RJ-45) connectors and cables contain eight wires, and phone (RJ-11) connectors and cables contain either four or six wires.

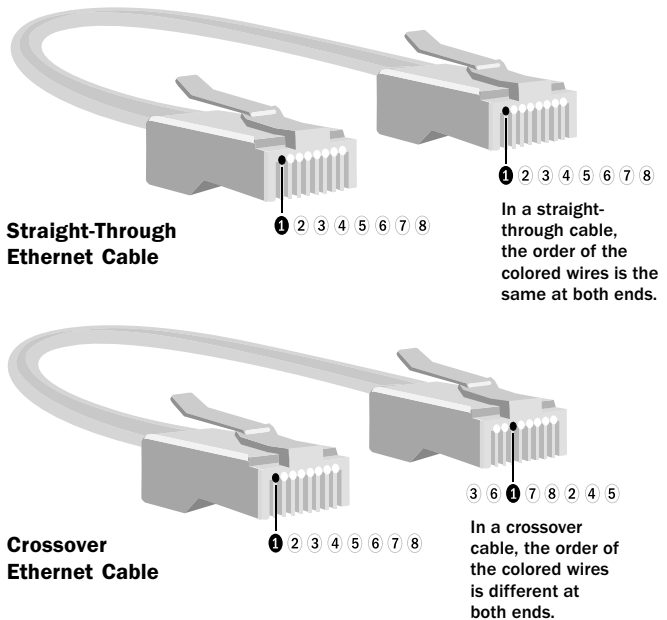


**RJ-45 Ethernet**  
(8 wires)

**RJ-11 Telephone**  
(4 or 6 wires)

## Straight-Through and Crossover Cables

Data is sent and received through specific wires within an Ethernet cable. Depending on the arrangement of its sending and receiving wires, an Ethernet cable is either a “straight-through” type or a “crossover” type. The following diagram demonstrates how to differentiate between the two types.



Your adapter supports both straight-through and crossover cables. For more information on the type of cable you need, see Chapter 2.

## Connecting to Broadband Modems

When you connect your adapter to a broadband modem, it is important to use either the cable that came with your modem or the same type of cable. Many modems use a crossover cable to connect to the network. If you are unsure about the type of Ethernet cable to use, see the documentation for your broadband modem.

# 2 | planning.

## Planning Your Network

You can use your Microsoft® Broadband Networking Ethernet adapter within an existing network or to create a new network. This chapter will help you locate setup instructions for your network configuration.

### Which Setup Option Best Matches Your Network?

The following options describe common ways to use your Ethernet adapter. Select the one that best matches your networking goals.

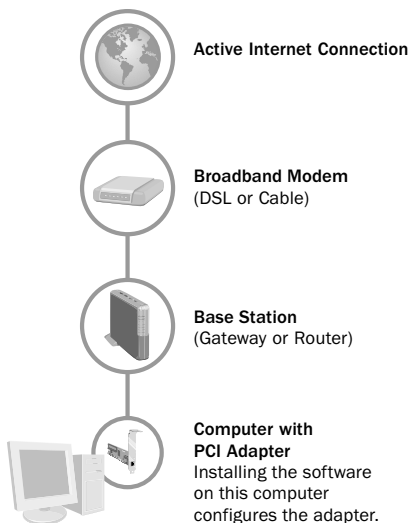
#### Option A:

**I want to add another computer to an existing network that has a base station (gateway or router).**

If your computers meet all of the following conditions, see the Typical Setup method in Chapter 3 to set up the adapter.

- You have an existing Ethernet network that has a base station (gateway or router), a broadband modem, and an active Internet connection.
- The computer you want to add has an available PCI slot.

After you set up the adapter by using Option A, your network will resemble this diagram:



## Security Considerations for Option A

In this configuration, your networked computers use a base station (gateway or router) to connect to the broadband modem and, indirectly, the Internet. A base station can help provide security for your network by using a hardware firewall or Network Address Translation (NAT) technology. It is important to enable the protection provided by your network to prevent security problems. For more information about security, see chapter 4.

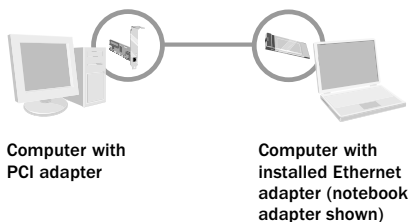
## Option B: I want to connect two computers directly to each other.

Your adapter can be used to network computers by using a “peer-to-peer” or “computer-to-computer” configuration.

If your computers meet all of the following conditions, use the Computer-to-Computer Setup method in Chapter 3.

- One computer has an available PCI slot for your new PCI adapter.
- A second computer already has an installed Ethernet adapter (or internal Ethernet card).
- You have a crossover Ethernet cable for connecting the two computers.

After you set up the adapter by using Option B, your network will resemble this diagram:



## Security Considerations for Option B

You can access the Internet by connecting one computer to your broadband modem and sharing the connection with the other computers by using Internet Connection Sharing (ICS) software. For more information about ICS, see Windows Help.

Any network that connects to the Internet needs protection from hackers and viruses. You can use firewall software, such as Internet Connection Firewall that comes with Windows XP, to help protect your network from unwanted intrusions.

If your network is not connected to the Internet, you do not need to worry about protecting your network from Internet intrusions.

### **Option C:**

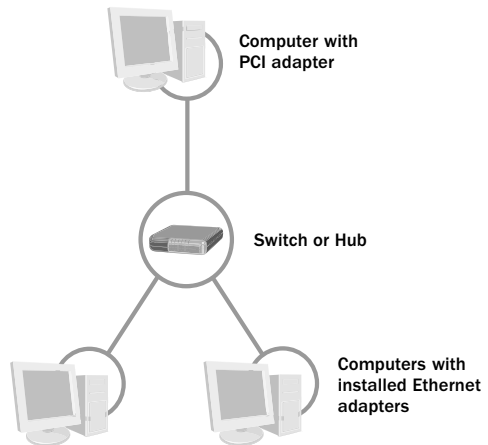
#### **I want to connect three or more computers by using a switch or hub.**

You can also create a computer-to-computer network of more than two computers by connecting them through a switch or hub.

If your computers meet all of the following conditions, use the Computer-to-Computer Setup method in Chapter 3.

- One computer has an available PCI slot for your new PCI adapter.
- All other computers already have an installed Ethernet adapter (or internal Ethernet card).
- You have one or more switches or hubs, with enough available ports to connect each computer in the network.
- You have a straight-through Ethernet cable for each computer on the network.

After you set up the adapter by using Option C, your network will resemble this diagram:



### **Security Considerations for Option C**

You can access the Internet by connecting one computer to your broadband modem and sharing the connection with the other computers by using Internet Connection Sharing (ICS) software. For more information about ICS, see Windows Help.

Any network that connects to the Internet needs protection from hackers and viruses. You can use firewall software, such as Internet Connection Firewall that comes with Windows XP, to help protect your network from unwanted intrusions.

If your network is not connected to the Internet, you do not need to worry about protecting your network from Internet intrusions.

**Option D:****I want to connect another computer to a Home Phone Line (HomePNA) Network or Power Line Communication (PLC) Network.**

To add a computer to a HomePNA or PLC network by using a Microsoft Broadband Networking Ethernet adapter, you need to purchase a HomePNA-to-Ethernet or PLC-to-Ethernet adapter. For more information about connecting to this kind of network, see the documentation for your HomePNA or PLC network or contact the manufacturer's support services.

To set up your adapter on a HomePNA or PLC network, see "Connecting an Adapter Using Plug and Play" in Chapter 3. You do not need to run the Setup Wizard, but you will need to configure your network settings on the newly networked computer.

**Security Considerations for Option D**

Any network that connects to the Internet needs protection from hackers and viruses. How you decide to protect your HomePNA or PLC network depends on how the network connects to your broadband modem and to the Internet.

Check that your networking hardware includes a firewall or Network Address Translation (NAT) software between all networked computers and the Internet.

**Option E:****I have already connected my adapter and have not yet installed the software.**

If you have already connected the adapter and have not yet installed the software, or you do not want to run the Setup Wizard, see "Setting Up an Adapter by Using Plug and Play" in Chapter 3 for setup instructions.



# 3 | setting up.

## Installing, Connecting, and Configuring Your Adapter

Your Microsoft® Broadband Networking Ethernet adapter can be set up in various ways, depending on how your existing network is configured. The instructions in this chapter will guide you through the process of setting up your adapter.

### Before You Begin

Before you install your PCI adapter, make sure that you have the following items at the computer:

#### Included in the Box:

- Microsoft Broadband Networking PCI Adapter
- *User's Guide*
- Setup CD-ROM

#### Also Required (but not included in the box):

- Ethernet cable
- System documentation from your computer's manufacturer

#### Optional:

- Network settings provided by your Internet service provider (ISP). You might need this information during setup, depending on how you install and configure your adapter.
- Microsoft Windows® Setup CD-ROM. This might be necessary if you need to install any additional Windows networking components during setup and configuration.
- A Wake-On-LAN cable. This optional cable is purchased separately and is necessary only if you want to use the Wake-On-LAN feature on an older computer. For more information, see Chapter 1.

 **Note**

If your computers are running Microsoft Windows XP or Windows 2000, you must be a member of the Administrator group to set up a network. If you are not logged on as an administrator, click **Start**, click **Log Off**, and then press CTRL+ALT+DELETE. Log on again with an administrator's name and password.

## Typical Setup

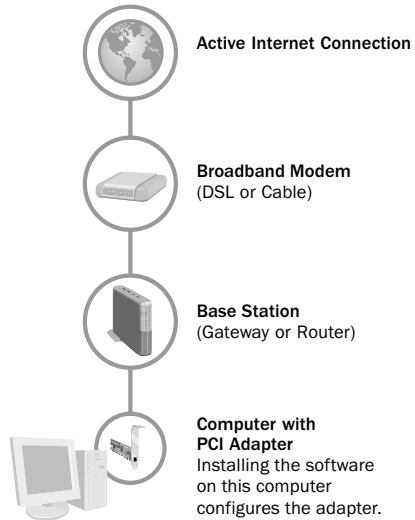
Follow the detailed instructions beginning on the next page if your existing network configuration matches all of the following conditions:

- You have an existing Ethernet network that has a base station (gateway or router), a DSL or cable modem, and an active Internet connection.
- The Windows-based computer you want to add has an available, high-powered USB port or a PC Card slot, and the computer is not already connected to another network.

See the setup instructions later in this chapter if:

- Your network is configured in any other way, or
- You have already connected your adapter and have not yet installed the adapter software.

After you set up your adapter, your network will resemble the following diagram.



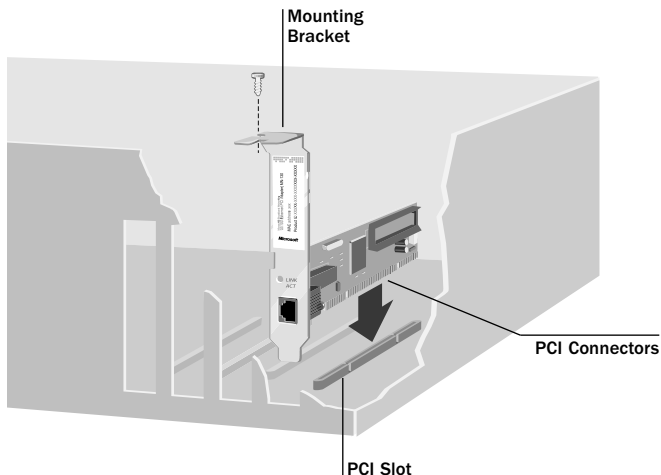


## Step 1: Install the Software

1. Insert the Setup CD-ROM into the CD-ROM drive of the computer that you want to connect to your network. If the Setup Wizard does not start automatically after a few seconds, double-click **My Computer**, double-click the drive that contains your Setup CD-ROM, and then double-click **Setup** or **Setup.exe**.
2. In the Setup Wizard, do the following:
  - When the wizard asks which device you are installing, click **Network Adapter**.
  - When the wizard asks which network adapter you are installing, click **PCI Adapter**.
3. When the wizard asks you to specify how you want to use your adapter, select the option that best describes your existing network and how you will connect to it.
4. When the wizard asks you to install the PCI adapter on your computer, shut down your computer by clicking **Close**.
5. After your computer shuts down completely, proceed to Step 2.

## Step 2: Install the Adapter in Your Computer

1. After your computer shuts down completely, disconnect the power cord from the back of the computer to prevent shock.
2. Remove the cover from your computer. For instructions, see your computer's documentation.
3. Locate an available PCI slot on your computer's motherboard.
4. Remove the protective bracket from the PCI slot.
5. Insert the PCI adapter into the slot as shown in the diagram, being careful to:
  - Line up the connectors on the PCI adapter with the PCI slot, and press evenly on the top of the card until it is securely connected to the motherboard.
  - Line up the mounting bracket with the appropriate opening on the back of your computer.



**Caution**  
Electronic components are sensitive to static electricity. Always ground yourself before touching the PCI adapter or any other internal components of your computer.

6. Screw the bracket of the PCI adapter securely to your computer's case.
7. If your computer does not support PCI 2.2 connectivity and you want to install Wake-On-LAN capability, do the following:
  - Connect one end of the Wake-On-LAN cable (purchased separately) to the connector on the top edge of the PCI adapter.
  - Connect the other end to the Wake-On-LAN connector on your motherboard.

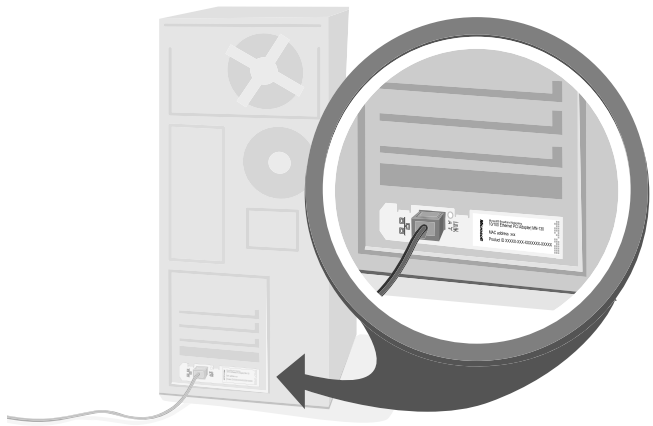
For more information about the location of this connector, see your computer's documentation.

8. Replace the cover on your computer.

### Step 3: Connect Your PCI Adapter to the Network

1. Connect one end of the Ethernet cable (not included) to the network port on the back of your PCI adapter.
2. Connect the other end of the Ethernet cable to an available Ethernet port on your existing router, hub, switch, or broadband modem.
3. Reconnect the power cord to the computer, and make sure no other cables have come loose during installation.

After you connect your adapter, the back of your computer will resemble the following diagram.



**Note**

If you originally logged on to an administrator account to begin Setup, make sure that you log on to the same administrator account after you restart your computer.

### Step 4: Configure Your Adapter

**1.** Turn on your computer.

When Windows starts, the Setup Wizard automatically resumes.

**2.** Continue to follow the instructions in the Setup Wizard.

When you complete the setup, click **Finish** to exit the Setup Wizard.

**3.** Remove the Setup CD-ROM from your CD-ROM drive and keep it in a safe place for future installations.

**4.** If your Internet service provider (ISP) requires additional network settings, such as a static IP address or special software to access the Internet, configure this now. For instructions, see your ISP documentation.

### Step 5: Test Your Network

To confirm that your network is working properly, do the following:

- Ensure that your connections are working properly by viewing the status of your network in the Broadband Network Utility. To learn more about the Broadband Network Utility, see Chapter 5.
- If your network has Internet access, test the connection by opening your Web browser and visiting a Web site, such as [www.microsoft.com](http://www.microsoft.com).

If you are having network problems or you cannot connect to the Internet through your broadband modem, see “Network and Internet Problems” in Chapter 6.

## Computer-to-Computer Setup

Use the setup instructions described here if:

- You want to connect two or more computers directly to each other or indirectly through a hub or switch.
- You want to connect a Microsoft Broadband Networking adapter to the first computer.
- All other computers to be networked have an installed Ethernet adapter or a built-in Ethernet port.



### Note

For more information about crossover Ethernet cables, see Chapter 1.

You will need an Ethernet cable for each computer you are adding to your network. You will need a crossover Ethernet cable if you are connecting two computers directly to each other. You will need a straight-through Ethernet cable for each computer that connects to a switch or hub.

### Step 1: Install the Software

1. Insert the Setup CD-ROM into the CD-ROM drive of the computer that you want to connect to your network. If the Setup Wizard does not start automatically after a few seconds, double-click **My Computer**, double-click the drive that contains your Setup CD-ROM, and then double-click **Setup** or **Setup.exe**.
2. In the Setup Wizard, do the following:
  - When the wizard asks which device you are installing, click **Network Adapter**.
  - When the wizard asks which network adapter you are installing, click **PCI Adapter**.
3. When the Setup Wizard asks you to specify how you want to use your adapter, select the option for computer-to-computer setup.
4. When the wizard asks you to install the PCI adapter on your computer, shut down your computer by clicking **Close**.
5. After your computer shuts down completely, proceed to Step 2.

### Step 2: Install the Adapter in Your Computer

Install the PCI adapter in your computer by following the instructions in “Step 2: Install the Adapter in Your Computer” in the “Typical Setup” section at the beginning of this chapter.

## Step 3: Connect Your Adapter to the Network

Do one of the following:

- **If you are connecting two computers** directly to each other, connect one end of a crossover Ethernet cable to the network port on the computer that you are adding to the network. Then connect the other end to an available port on the other computer.
- **If you are connecting three or more computers** to a switch or hub, connect one end of a straight-through Ethernet cable to the network port on the computer you are adding to the network. Then connect the other end to an available port on the switch or hub. Connect the remaining computers to your switch or hub.



### Note

If you originally logged on to an administrator account to begin Setup, make sure that you log on to the same administrator account after you restart your computer.



### Note

Workgroup names are used to group networked computers in Windows Network Neighborhood or My Network Places (depending on your operating system).

## Step 4: Configure Your Adapter

### 1. Turn on your computer.

When Windows starts, the Setup Wizard automatically resumes.

### 2. Follow the instructions in the Setup Wizard to set up file and printer sharing.

For more information about sharing files and printers, see Chapter 4.

### 3. To quit Setup and start the Microsoft Broadband Network Utility, click **Finish**.

### 4. Remove the Setup CD-ROM from the CD-ROM drive and store it in a safe place for future installations.

### 5. If your Internet service provider (ISP) requires additional network settings such as a static IP address or special software to access the Internet, configure this now. For instructions, see your ISP documentation.

## Step 5: Test Your Network

To confirm that your network is working properly, do the following:

- Ensure that your connections are working properly by viewing the status of your network in the Broadband Network Utility. To learn more about the Broadband Network Utility, see Chapter 5.
- If your network has Internet access, test the connection by opening your Web browser and visiting a Web site, such as [www.microsoft.com](http://www.microsoft.com).

If you are having network problems or you cannot connect to the Internet through your broadband modem, see “Network and Internet Problems” in Chapter 6.



#### Note

If you have any problems connecting to or using your network, see Chapter 6.

### For Windows 98 Users

If you cannot access other computers on your network, you might need to set up a static IP address on your computer.

Some ISPs provide each computer on their network with a permanent, or static, IP address, which uniquely identifies your computer on the Internet. When you use a static IP addressing scheme, each computer on your network requires a unique IP address provided by your ISP. Because of this, the Setup Wizard cannot automatically determine this static address and configure your network for Internet access.

To verify and configure your network IP address, do the following:

1. Click **Start**, point to **Settings**, and then click **Control Panel**.
2. Double-click **Network**.
3. Under **The following network components are installed**, click **TCP/IP**, and then click **Properties**.
4. In the **TCP/IP Properties** dialog box, click **IP Address**.

If a static IP address appears in the IP address list, you do not need to configure one. For more troubleshooting steps, see Chapter 6.

If a static IP address does not appear in the IP address list, follow the instructions below to choose and configure a new IP address.

#### Choosing an IP Address

IP addresses for internal networks are written as **192.168.X.Y**, where **X** and **Y** can be any number from 0 through 255.

For each computer on your network, select an IP address by choosing values for X and Y. Write down the IP address of each computer in a safe place, to help with configuration in the future.

**Tip:** Use the same number for X on each computer on the network, and start Y with 10, increasing the number by one for each additional computer. Using this scheme, your IP addresses would read: 192.168.1.10, 192.168.1.11, 192.168.1.12, and so on.

#### To Configure a Static IP Address

1. Click **Start**, point to **Settings**, and then click **Control Panel**.
2. Double-click **Network**.
3. Under **The following network components are installed**, click **TCP/IP**, and then click **Properties**.
4. In the **TCP/IP Properties** dialog box, click the **IP Address** tab.
5. In the **IP Address** field, type the new IP address for this computer.
6. Click **Apply** to save your changes, and then click **OK**.
7. When prompted, restart your computer.

After Windows starts, try testing your network again by using the instructions in “Step 5: Test Your Network,” above.

If you are still having problems connecting to your network, see “Network and Internet Problems” in Chapter 6.

## Setting Up an Adapter by Using Plug and Play

Most Windows-based computers recognize when a new hardware device has been installed and immediately try to configure it.

The Setup Wizard is designed to walk you through the process of installing your adapter. The wizard installs the Broadband Networking Utility, which allows you to monitor, configure, and troubleshoot your network.

To gain the benefits of the Broadband Networking Utility on your network, run the Setup Wizard before installing the adapter in your computer.



### Note

If you install your PCI adapter before running the Setup Wizard, you will need to manually configure your network settings.

If you install the adapter on your computer before you run the Setup Wizard, the Windows operating system will use its Plug and Play feature to display the New Hardware Wizard, Add New Hardware Wizard, or Found New Hardware Wizard (depending on your operating system).

If you are installing the adapter for use on a HomePNA or Power Line (PLC) network, use the following instructions.

### To set up your adapter by using Plug and Play

1. Connect the adapter to your computer by following the appropriate instructions in Step 2 of the Typical Setup method presented earlier in this chapter.
2. Turn on your computer and log on to Windows. Plug and Play detects the newly connected adapter and starts the Hardware Wizard.
3. Insert the Broadband Networking Setup CD-ROM into your CD-ROM drive.
4. In the Hardware Wizard, specify the CD-ROM as the location to search for the PCI adapter driver.  
The wizard loads the network adapter driver into memory.
5. Restart your computer if the Hardware Wizard asks you to do so. If the wizard does not finish, see Chapter 6.
6. If you want this computer to connect to the Internet, configure your Internet settings based on the information provided by your Internet service provider (ISP).
7. To make sure your adapter works correctly, do one of the following:

- If you are connected to the Internet, test your adapter by opening your Web browser and visiting a Web site, such as [www.microsoft.com](http://www.microsoft.com).
- If you are connected to another computer or an internal network, test your adapter by accessing shared files, folders, or printers on the network.
- If you are not successful with either of the previous tests, see the troubleshooting topics in Chapter 6. For more information about Plug and Play, see Windows Help.



# 4 | network tasks.

## Using Your Network

After setting up your wired network, you can perform common networking tasks, such as making files and printers available to other computers, and playing multiplayer games. When you need to check network settings or monitor devices connected to your network, you can use the Microsoft® Broadband Network Utility.

This chapter describes how to:

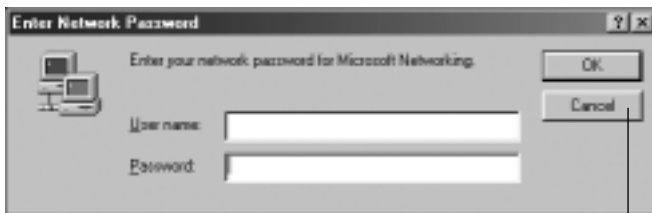
- Log on to your workgroup.
- Perform common networking tasks.
- Secure your network.

## Log On to Your Workgroup

After starting your computer, you must always log on to your network to access shared files, printers, and other resources.

If your computer is running an operating system that displays the Cancel button, do not click **Cancel** during the logon process, even if you decide to leave your password blank. Doing so will prevent you from accessing shared files and printers on the network. Make sure that your workgroup name is visible in the logon screen, type your password, and then click **OK**.

After you log on, you can perform certain networking functions, such as accessing the Internet or opening shared files from Microsoft Windows® Explorer. You do not need to open the Broadband Network Utility to perform these tasks.



Do Not  
Click **Cancel**

## To log off and log back on to your network

1. Click **Start**.
2. Click **Log Off**. (Or, in Microsoft Windows 2000, click **Shut Down**, make sure “Log Off” appears on the menu, and then click **OK**.)
3. Log on to your network.

After you log on to your network, you can perform certain network functions, such as opening shared files from Windows Explorer.

## Perform Common Networking Tasks

The information in this section will help you get started with the following tasks:

- Allowing access to an Internet connection
- Allowing access to files and folders
- Allowing access to printers
- Sharing other peripheral devices
- Reading e-mail messages on your network
- Playing games on your network and on the Internet



### Important

Before you proceed, check with your Internet service provider about its policy regarding Internet sharing.

## Allowing Access to an Internet Connection

If you have a gateway or router on your network and a connection to the Internet through a DSL or cable modem, the other computers on your network can share that Internet connection by using Internet Connection Sharing (ICS).

The procedure for accessing the Internet is the same whether your Internet connection is shared through a base station (gateway or router) or through ICS in Windows XP. In either case, each computer on the network needs to have a Web browser, such as Microsoft Internet Explorer.

### About Internet Connection Sharing (ICS)

Internet Connection Sharing is a feature found in Windows 98 SE, Windows Me, Windows 2000, and Windows XP that allows computers on a network to access the Internet through a single connection. If you use a Windows-based computer as your Internet access point (or ICS host), that computer must be turned on and you must be logged on to it for the other computers in your network to connect to the Internet.

For more information, look up “Internet Connection Sharing” in Windows Help.

The procedure for accessing the Internet is the same whether your Internet connection is shared through a Base Station or through Internet Connection Sharing in Windows.



### Note

For help using the file- and printer-sharing options in Windows XP, click **Start**, click **Help and Support**, and then type “ICS” in the **Search** box.

**Note**

If you have Microsoft Windows 2000 or Windows XP, you might need to have administrative privileges (or be the network administrator) to share folders with others. For more information, type “administrator” in the **Search** box in Windows Help.

**To access the Internet from each computer on a network**

1. Make sure that you have a Web browser (such as Microsoft Internet Explorer) installed on each computer that is connected to your network.
2. On any of the networked computers, open the Web browser.
3. Search for the Web site you want, or enter the address in the Address bar.

Note that the rate at which you are able to send and receive data over the Internet is highly dependent on many factors. Adding another user to your Internet connection typically reduces the speed of data transfer, but you are unlikely to notice the difference.

**Allowing Access to Files and Folders**

The information in this section provides general guidance for a few basic file-sharing tasks. For more detailed instructions and information about sharing files and folders, see Windows Help. To access Windows Help, click **Start**, and then click **Help** (or **Help and Support** in Windows XP).

To make it easy to share files and folders, all of your networked computers should be in the same workgroup. For more information, look up “workgroup” in Windows Help.

Sharing files and folders is a two-step process. You will need to:

1. Make the files and folders available to the network.
2. Use Windows (Network Neighborhood, My Network Places, or Windows Explorer) to access the shared files and folders.

**To make your files and folders available to the network**

While setting up your broadband network, you might have chosen to share all of your files and folders with the network. If you decide that you want to share only some of your files and folders with the network, you can use Microsoft Windows to specify which files and folders to share.

You can share an entire drive with the network, or you can share specific folders. Let’s say that you store photographs of your children in a folder named “Kids” on your computer, and you want to make the photographs available to your network. To do so, you would share only the Kids folder and not the other folders on your computer.

Only the computer users on your network will have access to the files you share. At times, you might want to prevent users, such as your children, from accessing particular folders and the files they contain. If you want to increase the security of your shared files, you can assign permissions and passwords to your files and folders. For more information, look up “permission” and “access control” in Windows Help. (In Windows Me, look up “controlling access.”)

Although you can share files, printers, and other devices on your network, you cannot share software programs, such as Microsoft Word or Microsoft Excel. If each computer on the network has those programs installed, you can share the files that you create within those programs.

For a computer's files and folders to be available to the network, the computer must be turned on and logged on to the network. Also, if the computer is turned on but in sleep mode, it will not be accessible from the network. For more information, look up "power options" in Windows XP Help, or "power management" in Windows Me, Windows 2000, and Windows 98 Help.

### **To access and organize your files**

Windows Explorer displays the hierarchical structure of files, folders, and drives on your computer. By using Windows Explorer, you can copy, move, rename, and search for files and folders. For example, you can open a folder that contains a file that you want to copy or move, and then drag the file to another folder or drive.

To open Windows Explorer, click **Start**, point to **All Programs** (or **Programs**, depending on your version of Windows), point to **Accessories**, and then click **Windows Explorer**.

You can use My Network Places (or Network Neighborhood, in Windows 2000 and Windows 98) to view all of the shared files and folders on your network.

My Network Places/Network Neighborhood presents a view of the network similar to the view of your computer presented by Windows Explorer. Use My Network Places/Network Neighborhood when you:

- Want to see all the resources available on the network.
- Already know where the resource that you want is located.
- Want to copy files and folders from one network location to another.

To open My Network Places, click **Start**, and then click **My Network Places**.

To open Network Neighborhood (in Windows 2000 and Windows 98), double-click **Network Neighborhood** on your desktop.

Before files or folders can be shared on your network, you will need to do the following:

- Make the file, folder, or drive available to the network.
- Use **My Network Places** or **Network Neighborhood** to view and access shared files and folders.

For a computer's files and folders to be available to the network, the computer must be turned on. If the computer is in sleep mode,

it will not be accessible from the network. For more information, type “power options” in the **Search** box in Windows Help.

### **To open a file stored on another computer on the network**

To complete this task, you must have the program on the local computer that was used to create the file. For example, if you want to open a file whose file name extension is .xls, you must have Microsoft Excel on your computer.

1. Open My Network Places or Network Neighborhood. (See the earlier instructions on how to open these windows.)
2. Double-click the name of the computer that has the file that you want to open.
3. Locate the file that you want to open.
4. Double-click the file.

### **To copy a file from your computer to another place on the network**

You need to open only one window – either Windows Explorer, My Network Place, or Network Neighborhood – to complete this task. Your computer and the computer you want to copy the file to will both appear in the same window.

1. Open Windows Explorer, My Network Places, or Network Neighborhood. (See the earlier instructions on how to open these windows.)
2. On your computer, locate the file that you want to copy to another computer on the network.
3. Click to highlight the file.
4. On the **Edit** menu, click **Copy**.
5. Click the destination folder on the other computer. (You might need to scroll through the window to find the folder that you want).
6. On the **Edit** menu, click **Paste**.

**Note**

Some printer drivers are not designed to allow printer sharing. For more information, see the documentation that came with your printer.

## Allowing Access to Printers

By using Windows, you can print documents on a printer that is attached to another computer on your network.

The following procedures provide general guidance for a few basic printer-sharing tasks. The steps that you need to take to complete these tasks will vary depending on the version of Windows installed on your computer. For complete instructions and information about sharing printers, type “printer sharing” in the **Search** box in Windows Help.

There is a difference between a “network printer” and a “local printer” that you share on a network. A network printer is connected directly to the network, rather than to a particular computer, and can be used by anyone on the network. Most offices have network printers that are stored in copy rooms accessed by many employees. A local printer, on the other hand, is attached to a specific computer, but can be shared with other computers on the network. You will most likely be using local printers with the Broadband Network Utility.

Before you can use a printer that is attached to another computer on your network, you will need to do the following:

- Make the printer available to the network (this is also known as sharing a printer).
- Run the **Add Printer Wizard** on each computer that you want to print from. This installs the printer drivers on each networked computer that will use the shared printer.

The procedures for sharing a printer and installing drivers differ depending on your version of Windows. For more detailed instructions, look up “sharing printers” in Windows Help.

### **To print to a printer that is attached to another computer on the network**

1. Open the document that you want to print, such as a document in Microsoft Word.
2. On the **File** menu, click **Print**.
3. In the **Print** dialog box, select the shared printer from the list of printers.
4. Click **OK**.

## Sharing Other Peripheral Devices

In addition to sharing most printers, you can share storage devices—such as hard drives, CD-ROM drives, and Zip drives—on your network. In general, any kind of drive represented by a drive letter (such as D:\) can be shared.

Storage devices that are not assigned a drive letter (such as tape drives) cannot be shared. Tape backups of your computer must be done from the computer that is attached to the tape drive.

In general, scanners, cameras, and CD-ROM burners cannot be shared with your network.

## Reading E-Mail Messages

You can access your e-mail messages from each networked computer the same way that you would access e-mail messages without a network (assuming that you have an Internet connection). Open your e-mail program, or, if you have a Web-based e-mail account, sign in to your account through your Internet browser.

Keep in mind the following: If you download e-mail messages from your e-mail account to one computer, those messages will not be accessible from the other computers on your network. Likewise, if you share an account with another person, and he or she downloads mail from the shared account to one computer on the network, you will not see that mail when you access the account from another computer.

To illustrate this point, let's say you share a postal mailbox at your home with your spouse. If you come home first and take the letters out of the mailbox, they will no longer be inside the mailbox when your spouse comes home later and checks for mail.

If you want your e-mail messages to remain available to all users of your network at any time, you should not download the messages to one computer. (However, you should delete old messages from your e-mail account on a regular basis, so that you don't exceed the storage space given to you by your e-mail provider.)

## Playing Games on Your Network and on the Internet

Many of the most popular games now have multiplayer capability, allowing two or more players to compete by using a local network. With network-enabled games, you can use your networked computers to play games with friends and family members.

Most games come with documentation that explains all you need to know to configure your network for multiplayer gaming. However, the following steps might help you prepare for playing games over the network:

- If you have purchased a multiplayer game, be sure to install it on each computer on the network that will be used for playing games.
- If you are playing a Web-based game, you might also be required to pay user fees or download game files to your computer. Be sure to follow the directions provided on the Web site.
- Make sure that the network protocols necessary to run the games that you want are installed on each computer on your network. For more information, see the documentation that came with your games.
- If you have problems connecting to a Web-based game, you might need to configure the base station to work with the ports that your game uses. For more information, see “Port Forwarding” in Chapter 6.

For information about playing games on the Internet, and for other game-related information, visit <http://www.microsoft.com/broadbandnetworking/>.



## Secure Your Network

Protecting the data and programs on your network computers from security threats, such as computer viruses and hackers, is very important. The following sections provide general information about steps you can take to protect your network.



### Important

Because Windows XP Internet Connection Firewall (ICF) will interfere with file and printer sharing, do not enable ICF on virtual private network (VPN) connection or on client computers.

## Protect Your Network from Computer Viruses

Even with a base station (gateway or router) installed, your network is still vulnerable to viruses.

To avoid having a problem with viruses on your network, consider the following suggestions:

- Educate yourself about how viruses are commonly spread so that you do not spread one yourself.
  - Do not load a program from an untrustworthy source on one of your network computers. E-mail attachments from people you don't know or files from the Internet or online bulletin boards are particularly risky.
  - Never open e-mail attachments that you are not expecting.
  - Scan all floppy disks before copying or opening files from them, or before starting your computer from them.
- Install an antivirus program on each computer on your network and use it regularly to check your computers for viruses. Remember to update the antivirus program on a regular basis.
- Learn the common signs of viruses: unusual messages that appear on your screen, decreased system performance, missing data, and inability to access your hard drive. If you notice any of these problems on your computer, run your antivirus software immediately to minimize the chances of losing data.

## **Protect Your Network from Hackers**

If you have not already done so, consider purchasing the Microsoft Broadband Networking Wired Base Station to establish a security layer between your network computers and the Internet. The security mechanisms provided by the base station include a firewall and Network Address Translation (NAT).

A firewall is a barrier that helps protect your network from unauthorized visitors. Like an actual firewall built to help prevent fire from spreading between adjoining buildings, computer firewalls help prevent unauthorized communication between an individual computer or group of networked computers and the Internet.

The firewall specifies what information can be communicated from the computers on your network to the Internet, and from the Internet to the computers on your network.

NAT hides the IP addresses of the individual computers on a network from the Internet so that only the router's IP address is visible on the Internet. Hiding these addresses provides another layer of protection against hackers trying to access the computers on your network.

# 5

# monitoring.


## The Broadband Network Utility

The Microsoft® Broadband Network Utility is automatically installed on your computer when you install the Setup software. Use it to check the status of your network or change your network settings. The Broadband Network Utility also shows the devices currently connected on your network.

This chapter describes how to:

- View computer, network connection, and Internet connection status.
- View and change network settings.
- Update network software, drivers, and firmware.

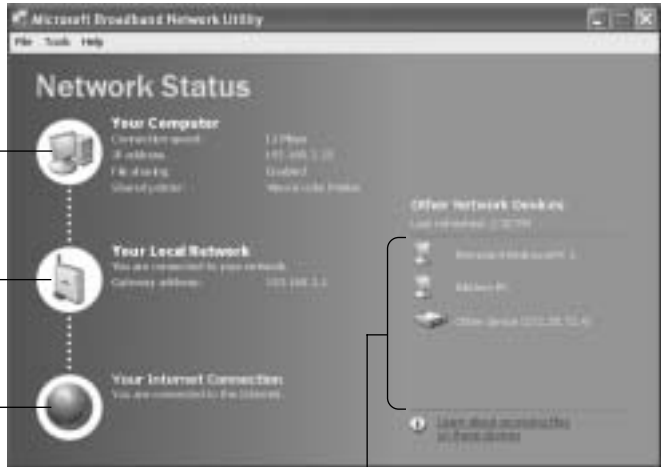
**To open the Broadband Network Utility, do one of the following:**

- Double-click the **Broadband Network Utility** icon  in the Windows notification area of the tray.
- Click **Start**, point to **Programs**, and then click **Microsoft Broadband Network Utility**.

Your Computer Status

Your Network Status  
(This page will look different if your network does not use a base station.)

Your Internet Connection Status



Status of all computers and devices in your workgroup

The following sections describe how to interpret status information about your network and perform common tasks by using the Broadband Network Utility.

For more detailed information about any of these tasks, see Broadband Network Utility Help.

### To Open Broadband Network Utility Help


1. Open the Broadband Network Utility.
2. On the **Help** menu, click **Microsoft Broadband Network Utility Help**.

## View the Status of Your Computer

This area of the Broadband Network Utility displays information about the computer that you are currently using. If you cannot access the Internet, or your network is not available, use the troubleshooting link to go directly to the list of related topics. For other network problems, on the **Help** menu, click **Microsoft Broadband Network Utility**, double-click **Troubleshooting**, and then click the topic that you want.

## View the Status of Your Network Connection

This area of the Broadband Network Utility displays information about your network connection. If there is a problem with your connection, on the **Help** menu, click **Microsoft Broadband Network Utility**, double-click **Troubleshooting**, and then click the file that you want.

You can also view information about the status of your network connection by resting the pointer on the **Broadband Network Utility** icon  in the Windows notification area of your taskbar or tray.



Broadband Network  
Utility icon

## View the Status of Your Broadband Internet Connection

This area of the Broadband Network Utility lets you know whether you are currently connected to the Internet. If there is a problem with your Internet connection, on the **Help** menu, click **Microsoft Broadband Network Utility**, double-click **Troubleshooting**, and then click the file that you want.

## View the Status of Other Network Devices

This area of the Broadband Network Utility displays information about all the computers and devices in your workgroup.

### To refresh the network device list

- Right-click any icon in the network device list, and then click **Refresh**.

### To remove an inactive device from the network device list

- Right-click the dimmed icon for the device, and then click **Remove from List**.

## View and Change Network Settings

You can view and change your adapter settings from the Broadband Network Utility. If you have a Microsoft base station, you can also use the Broadband Network Utility to view and change your base station settings.

### To view adapter settings

- On the **Tools** menu, click **Computer Settings**.

### To view and change base station settings

1. On the **Tools** menu, click **Base Station Management Tool**.
2. Type the base station password.

## Customize the Broadband Network Utility

You can customize the way you view and use the Broadband Network Utility.

### To customize the Broadband Network Utility

- On the **Tools** menu, click **Options**.

## Update Software, Drivers, and Firmware

Occasionally, Microsoft might provide upgrades to the Broadband Network Utility software, network drivers, or firmware on the Microsoft Broadband Networking Web site. When an upgrade is available, you will automatically be notified. After you log on to a networked computer, a message will appear in the notification area of your desktop with a link to the Microsoft Broadband Networking Web site.

### **To update network software, drivers, or firmware**

- 1.** Open the Broadband Network Utility.
- 2.** On the **Help** menu, click **Check for Updates Online**.
- 3.** Follow the instructions on the Microsoft Broadband Networking Web site to download the most current software, drivers, or firmware.

# 6 | troubleshooting.

## Basic Troubleshooting

This chapter will help you solve installation and setup problems with your Microsoft® Broadband Networking Ethernet adapter. The following areas are covered:

- Setup and Hardware Problems
- Network and Internet Problems
- File and Printer Sharing Problems

If the problem you are experiencing is not covered in this chapter, you can find more troubleshooting information in Broadband Network Utility Help, or on the Microsoft Broadband Networking Web site at <http://www.microsoft.com/broadbandnetworking/>.

## Setup and Hardware Problems

This section will help you solve problems you might encounter while running the Setup Wizard or connecting your new adapter.

### **I'm having problems installing the Broadband Network Utility.**

- Verify that your computer conforms to the minimum system requirements for your Microsoft Broadband Networking adapter.

When you run the Setup Wizard, the Broadband Network Utility is installed automatically. If your computer does not meet the minimum system requirements, the software might not install fully or at all.

### **After installing my PCI adapter, I cannot turn on my computer or it goes into Safe Mode when Windows starts.**

- Verify that the PCI slots in your system are at least PCI 2.1 compliant. This information is listed in the manual that came with your computer.
- Verify that the PCI adapter is firmly connected to the PCI slot in your computer. A partially connected PCI adapter might cause your computer either to not turn on or to function erratically.
- If you have another available PCI slot in your computer, try moving the PCI adapter to that slot.
- Try plugging the PCI adapter into PCI slot 1 in your computer. For more information about which PCI slot is slot 1, see your computer's documentation.

#### **Note**

To avoid electrostatic shock, always disconnect the power cable from your computer when working inside the computer case.

Each PCI slot in your computer uses different system resources. By trying a different PCI slot, you can remove potential resource conflicts between your PCI adapter and other computer peripherals.

- Resolve any device conflicts in Windows. You can use Windows Troubleshooting to ensure that your PCI adapter is not trying to use computer resources already being used by another piece of hardware. For more information about resolving device conflicts, see Windows Help.

**The Setup Wizard or Windows is not detecting the connection to my PCI adapter.**

- Make sure that the cables in your network are securely fastened to the correct ports, and your network card is properly seated in the correct slot.

Check all of the following connections: power cables, cables between the adapter and the network, and cables between the network and the broadband modem.

Ethernet cables closely resemble standard residential telephone cables. However, The RJ-45 connectors on Ethernet cables are larger than the RJ-11 connectors on telephone cables. Although a standard residential telephone connector can be inserted into an Ethernet port, the port will not function and the cable might damage your Ethernet device.

- Make sure that the status LED on your PCI adapter is illuminated when connected to your network. If it is not illuminated, try a different Ethernet cable or a different network port.

## Network and Internet Problems

This section will help you solve common installation and setup problems as you integrate the Microsoft Broadband Networking PCI Adapter with a new or existing network.

The PCI adapter is designed to have the software installed before the hardware; otherwise, the Setup Wizard will not correctly configure your network settings.

If you replaced your previous network adapter with a Microsoft adapter, make sure that you disabled all of your previous network settings and removed all unnecessary cabling. When possible, use the same cables to reconnect your computer to the network. Doing so can help prevent connectivity problems.



### **My computer recognizes my network, but it is not working correctly.**

- Verify that you have the correct network settings.

Incorrect network settings will prevent networked computers from communicating properly. For example, a computer might try to detect a network by using the wrong name or by using a different communication protocol than that of all of the other computers on the network. You can view and modify most network settings in the Broadband Network Utility.

For more information about viewing and modifying your network settings, search for “Network” in Windows Help.

### **My network connection works only occasionally.**

- Verify that other devices running Network Address Translation (NAT) or Dynamic IP (DHCP) have NAT and DHCP disabled.

Devices such as your modem might have NAT or DHCP running at the same time as another network device, such as a base station (gateway or router). If this is the case, the devices will interfere with each other and cause intermittent failures. For instructions about disabling NAT and DHCP on the other device, see the documentation for the other device.

### **My network is slow.**

- Try decreasing the number of computers that are simultaneously accessing your network.

Your network has a limited amount of bandwidth for transmitting data. As more computers access your network at the same time, the bandwidth must be split up between all computers. By reducing the number of computers accessing your network, you can increase the bandwidth available to each computer.

You might find that you need more bandwidth to use all of your computers on the network. If your connection is still too slow, you can contact your Internet service provider (ISP) to verify that there are no problems with your connection or to inquire about upgrading to a faster connection.

### **My computer can't find my workgroup.**

- Check the name of the workgroup in network settings on another computer in the workgroup.

The workgroup name is on the Advanced Network Settings screen, which you can access from the Customize Your Network screen in the Broadband Network Utility.

If your computer can't find your workgroup, it might be using the wrong name to look for the workgroup or you might be logged on to a domain. You cannot be logged on to a domain and a workgroup at the same time.

### **My existing network used to work, but now it doesn't.**

- ❑ Check the existing network installation to verify that all cables are still attached and all link/activity lights on the other network devices read correctly.
- ❑ Verify that the network settings on all of the computers are correct.

For more information about replacing or integrating an existing network with the Broadband Network Kit, see Chapter 4. For more detailed information, see Broadband Network Utility Help.

### **I cannot access the Internet with my newly networked computer, even though the Setup Wizard finished successfully. My other networked computers can access the Internet.**

If you have successfully completed the Setup Wizard to install your adapter, but cannot access the Internet from the system with the new adapter, you might need to configure your Internet settings for access to your Internet service provider (ISP).

The troubleshooting steps necessary to fix your Internet connection are different depending on what type of connection you have, so the first step is to determine how you connect to your ISP for Internet access. This information is available either in the documentation from your ISP or by calling technical support for your ISP and inquiring about your connection type. There are three main broadband connection types:

#### **Dynamic Host Configuration Protocol (DHCP) connections**

DHCP is the most common type of broadband Internet access. By default, the Setup Wizard configures your adapter to use DHCP. If you are connecting your adapter to a base station (router or gateway), you do not need to configure any additional network information.

The following instructions will help you troubleshoot Internet connection problems with DHCP:

- ❑ Try accessing shared files or printers on another computer on your network. If you cannot access the other computers, check to make sure all cables are connected between your computer and the network, and the status light on your PCI adapter's mounting bracket is green.
- ❑ Try connecting the Ethernet cable from this computer to a port on your base station, switch, or hub that is currently connected to a computer that can access the Internet.

If your newly networked computer can connect to the Internet when using another computer's network port, there might be a problem with one of the ports on your networking hardware. Consult the documentation for the base station, hub, or switch for troubleshooting steps particular to that hardware.

## Point-to-Point Protocol over Ethernet (PPPoE) connections

PPPoE is a connection type used by some DSL modems to access the Internet through an ISP. If you use a PPPoE connection to connect to the Internet, your ISP should have provided you with special access software. This software will automatically connect to the Internet by using the user name and password provided by your ISP.

Check the documentation from your ISP to find out more about how to install and configure the access software on your computer. You will not be able to access the Internet without this software.

## Static IP address connections

Some ISPs provide each computer on their network with a permanent, or static, IP address, which uniquely identifies your computer on the Internet. When you use a static IP addressing scheme, each computer on your network requires a unique IP address provided by your ISP. Because of this, the Setup Wizard cannot automatically determine this static address and configure your network for Internet access. The following section describes the necessary steps for configuring a static IP address.

Before you begin, make sure that you have all of the configuration information from your ISP, including a unique static IP address, a gateway address, and one or two DNS server addresses for the newly networked computer.

To configure a static IP address, follow the instructions for your operating system.

### Windows XP:

1. Click **Start**, click **Control Panel**, and then double-click **Network Connections**.
2. Click the connection you want to configure, and then, under **Network Tasks**, click **Change settings of this connection**.
3. On the **General** tab, under **This connection uses the following items**, click **Internet Protocol (TCP/IP)**, and then click **Properties**.
4. Click **Use the following IP address**, and in **IP address**, type the new static IP address you wish to assign to this computer.
5. Type **255.255.255.0** in **Subnet mask**.
6. Type the gateway address in **Default gateway**.
7. Click **Use the following DNS server addresses**, and in **Preferred DNS server** and **Alternate DNS server**, type the addresses of the primary and secondary DNS servers.
8. Click **Apply** or **Close** to save your new Internet settings.
9. Test your Internet connection by opening a Web page in your browser.

### Windows 98, Windows 98 SE, and Windows Me:

1. Click **Start**, click **Settings**, click **Control Panel**, and then double-click **Network**.
2. Under **The following network components are installed**, click TCP/IP and then click **Properties**.
3. Click the **IP Address** tab in the TCP/IP Properties window.
4. Type the new IP address for this computer in **IP address**. For guidelines on choosing an IP address, see “Computer-to-Computer Setup” in Chapter 3.
5. Type **255.255.255.0** in **Subnet Mask**.
6. Click the **Gateway** tab, and type your gateway in **New Gateway**.
7. Click **Add** to add your gateway.
8. Click the **DNS Configuration** tab, and in **Primary DNS server** and **Secondary DNS server**, type the addresses of the primary and secondary DNS servers
9. Click **Apply** or **OK** to save your changes, and then click **OK** to quit the TCP/IP Properties window. When prompted, restart your computer.
10. After Windows starts, try testing your Internet connection by opening a Web page in your browser.

### Windows 2000:

1. Click **Start**, click **Control Panel**, and then double-click **Network** and **Dial-Up Connections**.
2. Double-click **Local Area Connection**.
3. On the Local Area Connection Status page, click **Properties**.
4. Under **Components checked are used by this connection**, click **TCP/IP** and then click **Properties**.
5. Click **Use the following IP address**, and in **IP address**, type the IP address.
6. Type the subnet mask and gateway addresses in **Subnet mask** and **Default gateway**, respectively.
7. Click **Use the following DNS server addresses**, and in **Preferred DNS server** and **Alternate DNS server**, type the addresses of the primary and secondary DNS servers.
8. Click **Apply** or **OK** to save your changes, and then click **OK** to quit the TCP/IP Properties window. If prompted, restart your computer.
9. After Windows starts, try testing your Internet connection by opening a Web page in your browser.

## File and Printer Sharing Problems

This section will help you solve common installation and setup problems with sharing files and printers on your network. If you installed your network hardware by using the Setup Wizard, file and printer sharing might have automatically been configured for you, depending upon your network configuration.

To learn how to add or share files and printers over your network, see Chapter 4 and Windows Help.

### **I cannot access shared files over my network.**

To share files between computers on your network, all computers must belong to the same workgroup. Check the workgroup names on each computer by using the following instructions.

#### **Windows XP:**

1. Click **Start**, and then click **Control Panel**.
2. Double-click **System**, and then click the **Computer Name** tab.

#### **Windows 2000:**

1. Click **Start**, point to **Settings**, and then click **Control Panel**.
2. Double-click **System**.
3. Click the **Network Identification** tab.

#### **Windows 98, Windows 98 SE, and Windows Me:**

1. Click **Start**, point to **Settings**, and then click **Control Panel**.
2. Double-click **Network**, and then click the **Identification** tab.

If you need to change your workgroup name on a computer, click **Change**, and then type the correct workgroup name. After restarting your computer and joining the new workgroup, try sharing or accessing shared files again.

### **My printer is connected directly to my computer and is not being recognized by other computers on my network.**

- Check to make sure that the printer is turned on.
- Verify that the cable connecting the printer and the computer is securely attached.
- Try printing by using the self-test feature built into your printer. Each printer's self-test feature is slightly different. See your printer documentation for specific instructions.

If the printer self-test DOES not work, see your printer troubleshooting documentation for more information.

If the printer self-test works correctly, the problem might be with your network connection or with your printer drivers.

- Check to make sure all computers on the network have the proper printer driver installed.

You can install the printer driver by opening the Printers page in the Control Panel. If Windows prompts you for a driver disk, use the driver disk that came with your printer. For more information about configuring your printer, see Windows Help.

- Verify that all network cables between the computers and the printer are securely connected.

You can check to see whether the network recognizes a connection by inspecting the link lights associated with the Ethernet ports on your hardware. When the cable is connected successfully, the link light should be illuminated.

If one of your network cables is connected to a network port that does not have an illuminated link light, there might be a problem with the cable itself. Try using a different Ethernet cable to make the connection.

**My printer is connected directly to my network, and I cannot access the printer from the computers on my network.**

- Check to make sure that the printer is turned on.
- Verify that all network cables between the computers and the printer are securely connected.

You can check to see whether the network recognizes a connection by inspecting the link lights associated with the Ethernet ports on your hardware. When the cable is connected successfully, the link light should be illuminated.

If one of your network cables is connected to a network port that does not have an illuminated link light, there might be a problem with the Ethernet port or the cable itself. Try using a different Ethernet cable to make the connection.

- Try printing by using the self-test feature built into your printer. Each printer's self-test feature is slightly different. See your printer documentation for specific instructions.

If the printer self-test does not work, see your printer troubleshooting documentation for more information.

If the printer self-test works correctly, the problem might be with your network connection or with your printer drivers.

- Check to make sure that all computers on the network have the proper printer driver installed.

You can install the printer driver by opening the Printers page in the Control Panel. If Windows prompts you for a driver disk, use the driver that came with your printer. For more information about configuring your printer, see Windows Help.

**My networked printer is visible on the network, but it does not print.**

- Try resetting the printer. See your printer documentation for instructions.
- If you are troubleshooting a printer that is connected directly to the network, try printing a test page by using the printer's diagnostic features. If the test page prints correctly, the problem might be in the network or the printer networking settings.
- Check the program from which you are trying to print to ensure that printing is enabled and the correct printer is selected.







# reference.

## Getting Help

### Visit Us on the Web

Please visit our Web site at  
<http://www.microsoft.com/broadbandnetworking/>

### Click Help in the Broadband Network Utility

Click **Help** in the Microsoft® Broadband Network Utility for detailed troubleshooting information.

## Technical Support

### Product Name:

Microsoft® Broadband Networking PCI Adapter

### Support Information Online:

<http://support.microsoft.com/directory/productsupportoption.asp>

In Canada, visit <http://www.microsoft.ca/support/>

### Online Support:

Work with a Microsoft Support Professional over the Internet.  
Submit your issue online:

<http://support.microsoft.com/directory/onlinesr.asp>

### Phone Support:

Toll-free support for U.S. customers: (800) 936-3900. For customers in Canada: (800) 668-7975. These numbers are only for support of Microsoft Broadband Networking products. Please do not use these phone numbers for support of other Microsoft products.

### TTY Users:

Microsoft text telephone (TTY/TDD) services are available at (425) 635-4948 in Washington state or (800) 892-5234 elsewhere in the United States. Call (905) 568-9641 in Canada.

### Worldwide:

The support terms listed here are available in the United States and Canada only.

Support outside the United States and Canada may vary.

For regional contact details, please visit

<http://support.microsoft.com/default.aspx?scid=/international.aspx?>

### Conditions:

Microsoft's support services are subject to then-current prices, terms, and conditions, which are subject to change without notice.

# Regulatory Information

## United States Radio and TV Interference Regulations

This device complies with Part 15 of the U.S. Federal Communications Commission (FCC) rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Microsoft hardware device(s) that accompanies this software can radiate radio frequency (RF) energy. If not installed and used in strict accordance with the instructions given in the printed documentation and software Help file, the device may cause harmful interference with other radio-communications devices (for example AM/FM radios, televisions, baby monitors, cordless phones, etc.). Any cable that is connected to the device must be a shielded cable that is properly grounded. There is, however, no guarantee that RF interference will not occur in a particular installation.

Your Microsoft hardware device has been tested, and it complies with the limits for a Class B digital device in accordance with the specifications in Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful RF interference in a residential installation.

To determine if your hardware device is causing interference to other radio-communications devices, disconnect the device from your computer. If the interference stops, it was probably caused by the device. If the interference continues after you disconnect the hardware device, turn the computer off and then on again. If the interference stopped when the computer was off, check to see if one of the input/output (I/O) devices or one of the computer's internal accessory boards is causing the problem. Disconnect the I/O devices one at a time and see if the interference stops.

If this hardware device does cause interference, try the following measures to correct it:

- Relocate the antenna of the other radio-communications device (for example AM/FM Radios, televisions, baby monitors, cordless phones, etc.) until the interference stops.
- Move the hardware device farther away from the radio or TV, or move it to one side or the other of the radio or TV.
- Plug the computer into a different power outlet so that the hardware device and radio or TV are on different circuits controlled by different circuit breakers or fuses.
- If necessary, ask your computer dealer or an experienced radio-TV technician for more suggestions. You may find helpful information in the booklet "The Interference Handbook" (1995), published by the FCC. The booklet is available from the FCC at 1-888-CALL FCC or at <http://www.fcc.gov/cib/Publications/tvbook.html>.

### Note

Any changes or modifications not expressly approved by Microsoft could void the user's authority to operate this device.

For use with UL Listed and GS approved personal computers.

Not intended for use in machinery or industrial applications.

Tested to comply with FCC standards. For home and office use. Model Number: MN-100, MN-110, MN-120, MN-130, MN-150, MN-500, MN-510, MN-520.

Microsoft Corporation  
One Microsoft Way  
Redmond, WA 98052-6399.  
(800) 426-9400 (United States)  
(800) 933-4750 (Canada)

## Canadian Radiocommunication Regulations

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

# Limited Warranty

**PLEASE READ THIS MANUFACTURER'S GUARANTEE CAREFULLY TO UNDERSTAND YOUR RIGHTS AND OBLIGATIONS**

## **MANUFACTURER'S GUARANTEE AND LIMITATION OF LIABILITY**

**NOTE:** The following guarantee is not restricted to any territory and does not affect any statutory rights that you may have.

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**MICROSOFT GUARANTEE.** Microsoft guarantees (this "Guarantee") that on the day you receive the Hardware Device and for the next two (2) years thereafter (a) the Hardware Device will be substantially free from defects in materials and workmanship, and (b) any support services provided by Microsoft will be substantially as described in applicable written materials provided to you by Microsoft, and Microsoft support engineers will use reasonable efforts, care and skill to solve any problem issues. In the event that the Hardware Device fails to comply with this Guarantee, Microsoft shall either, at Microsoft's option, (a) repair or replace the Hardware Device or (b) return the price you paid for the Hardware Device (if any), provided that you return the Hardware Device to Microsoft with a copy of your receipt of purchase. You may exercise this remedy without charge, except that you are responsible for any expenses you may incur. This Guarantee is void if failure of the Hardware Device results from any accident, abuse or misapplication. Any replacement Hardware Device shall be guaranteed for the remainder of the original Guarantee period or thirty (30) days, whichever is longer. Microsoft shall not be liable for any loss or damage that you could have reasonably avoided, for example, by backing up your software and files regularly.

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**REGISTRATION.** You need not return the registration card for this Guarantee to be effective.

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**GOVERNING LAW.** If you acquired the Hardware Device in the United States of America, the laws of the State of Washington, U.S.A., apply to this agreement. If you acquired this Hardware Device in the European Union, Iceland, Norway or Switzerland then local laws apply. If you acquired this product in Canada, except where expressly prohibited by local laws, the laws in force in the Province of Ontario, Canada apply to this agreement and each of the parties hereto irrevocably attorns to the jurisdiction of the courts of the Province of Ontario and further agrees to commence any litigation which may arise hereunder in the courts located in the Judicial District of York, Province of Ontario.

If you acquired this Hardware Device outside of the countries listed above, then local laws may apply.

**QUESTIONS.** Should you have any questions concerning this agreement, or if you desire to contact Microsoft for any reason, please use the address information enclosed in this Hardware Device to contact the Microsoft subsidiary serving your country, or visit Microsoft on the World Wide Web at <http://www.microsoft.com>.

## Limited Warranty Continued

**VEUILLEZ VOUS ASSURER QU'APRÈS UNE LECTURE ATTENTIVE VOUS AYEZ BIEN COMPRIS L'ENSEMBLE DES DROITS ET LIMITATIONS EXPOSÉES DANS CETTE GARANTIE DU FABRICANT**

GARANTIE ET EXCLUSION DE RESPONSABILITÉ DU FABRICANT

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**ENREGISTREMENT.** Il n'est pas nécessaire de renvoyer la carte d'enregistrement pour faire valoir la présente Garantie.

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# Technical Specifications

## PCI Adapter

<b>Standards</b>	IEEE 802.3 Ethernet; IEEE 802.3u Fast Ethernet; IEEE 802.3x 100BASE-TX Flow Control; IEEE 802.1 p/Q Quality of Service; PCI Bus 2.2 ACPI; OnNow/PC 98, PC 99; DMI 2.0, Wired for Management 2.0
<b>Host Interface</b>	PCI Bus compliant to PCI spec 2.2; 32-bit
<b>Network Interface</b>	Ethernet IEEE 802.3 and 802.3u CSMA/CD; Built-in RJ-45 connector; Auto-negotiation 10/100 Mbps; Full-duplex support
<b>Data rate</b>	10 and 100 Mbps, full- and half-duplex
<b>Indicators</b>	Link/Activity LED combined
<b>Power</b>	5 V @ 180 mA
<b>Operating Temperature</b>	0 to 40 °C
<b>Storage Temperature</b>	-25 to 60 °C
<b>Humidity</b>	10 to 95 percent non-condensing
<b>Emissions</b>	FCC Part 15 Class B compliant; Canada ICES-003
<b>Safety</b>	UL 60950 / CSA-C22.2 No 60950
<b>Physical Dimensions</b>	4.72" x 1.69" (119.9 x 42.9 mm) without mounting bracket
<b>Weight</b>	1.63 oz (46.1g)

# System Requirements

## **To use the Microsoft Broadband Networking Ethernet PCI Adapter:**

- Personal computer with an available PCI slot
- Personal computer with processor running Microsoft Windows 98, Windows 98 SE, Windows Millennium Edition (Windows Me), Windows 2000 Professional, Windows XP Professional, or Windows XP Home Edition operating system.

## **Additional requirements for using the Microsoft Broadband Networking setup wizard and Network Utility:**

- Microsoft Internet Explorer 5.0 or later; setup will install Internet Explorer 6.0 browser components if needed, but will not displace your primary browser.
- 28MB of available hard-disk space if you already have Internet Explorer 5.5 or 6.0; 132 MB of available hard-disk space if you are installing Internet Explorer for the first time.
- 4x or faster CD-ROM drive
- VGA or higher-resolution monitor

## **Recommended:**

- Microsoft Mouse or compatible pointing device
- 3.5" high-density disk drive



# glossary.

This glossary contains common terms for wired and wireless networking.

- 100Base-T** Also known as “Fast Ethernet,” an Ethernet cable standard with a data transfer rate of up to 100 Mbps.
- 10Base-T** An older Ethernet cable standard with a data transfer rate of up to 10 Mbps.
- 802.11, 802.11b** A family of IEEE-defined specifications for wireless networks. Includes the 802.11b standard, which supports high-speed (up to 11 Mbps) wireless data transmission. Microsoft® Broadband Networking wireless products comply with the 802.11b standard.
- 802.3** The IEEE-defined specification that describes the characteristics of Ethernet connections.
- access point** See **wireless access point**.
- ad hoc network** A solely wireless computer-to-computer network. Unlike an infrastructure network, an ad hoc network does not include a central base station, router, or gateway.
- adapter** See network adapter.
- base station** A device (also known as a router or gateway) that acts as a central point for networked devices, receives transmitted messages, and forwards them. Microsoft Broadband Networking base stations can link many computers on a single network, and can share a secure Internet connection with wired and wireless devices.
- broadband connection** A high-speed connection, typically 256 Kbps or faster. Broadband services include cable modems and DSL.
- broadband modem** A device that enables a broadband connection to access the Internet. The two most common types of broadband modems are cable modems, which rely upon cable television infrastructure, and DSL modems, which rely upon telephone lines operating at DSL speeds.
- cable modem** See **broadband modem**.
- CAT 5 cable** Abbreviation for “Category 5 cable.” A type of Ethernet cable that has a maximum data rate of 100 Mbps.
- client** Any computer or program that connects to, or requests the services of, another computer or program on a network. For a local area network or the Internet, a client is a computer that uses shared network resources provided by a server.

<b>client/server network</b>	A network of two or more computers that rely upon a central server to mediate the connections or provide additional system resources. This dependence upon a server differentiates a client/server network from a peer-to-peer network.
<b>computer name</b>	A name that uniquely identifies a computer on the network so that all its shared resources can be accessed by other computers on the network. One computer's name cannot be the same as any other computer or domain name on the network.
<b>crossover cable</b>	See <b>Ethernet cable</b> .
<b>DHCP</b>	Acronym for "Dynamic Host Configuration Protocol." A TCP/IP protocol that automatically assigns temporary IP addresses to computers on a local area network. Microsoft Broadband Networking base stations support the use of DHCP which, combined with ICS, allows you to share one Internet connection with multiple computers on a network.
<b>dial-up connection</b>	An Internet connection of limited duration that uses a public telephone network rather than a dedicated circuit or some other type of private network. The Microsoft Broadband Networking hardware does not support the use of a dial-up connection to the Internet.
<b>DNS</b>	Acronym for "Domain Name System." A data query service chiefly used on the Internet for translating host names into Internet addresses. The DNS database maps DNS domain names to IP addresses, so that users can locate computers and services through user-friendly names.
<b>domain</b>	In a networked computer environment, a collection of computers that share a common domain database and security policy. A domain is administered as a unit with common rules and procedures, and each domain has a unique name.
<b>driver</b>	Within a networking context, mediates communication between a computer and a network adapter installed on that computer.
<b>DSL</b>	Acronym for "Digital Subscriber Line." A constant, high-speed digital connection to the Internet that uses standard copper telephone wires.
<b>DSL modem</b>	See <b>broadband modem</b> .
<b>duplex</b>	A mode of connection; full-duplex transmission allows for the simultaneous transfer of information between the sender and the receiver. Half-duplex transmission allows for the transfer of information in only one direction at a time.
<b>dynamic IP address</b>	The IP address assigned (using the DHCP protocol) to a device that requires it. A dynamic IP address can also be assigned to a router by an ISP.



<b>encryption</b>	The process of encoding data to prevent unauthorized access, especially during transmission. Microsoft wireless hardware relies upon encryption to ensure that data transmissions cannot be accessed by users outside the network. Also see <b>WEP</b> .
<b>Ethernet</b>	A networking standard that uses cables to provide network access.
<b>Ethernet cable</b>	A type of cable that facilitates network communications.
<b>firewall</b>	A security system that protects a network from external threats, such as hacker attacks, originating outside the network. A hardware firewall is a connection routing device with specific data-checking settings, that protects all of the devices connected to it. The Microsoft Broadband Networking Base Station includes a hardware firewall. A software firewall resides on a single computer, protecting that computer from external threats. See Microsoft Windows® XP Help for more information about the Internet Connection software firewall.
<b>firmware</b>	Software information stored in non-volatile memory on a device.
<b>gateway</b>	See <b>base station</b> .
<b>gateway address</b>	The IP address used when making a connection outside your immediate network.
<b>host name</b>	The DNS name of a device on a network, used to simplify the process of locating computers on a network.
<b>hub</b>	A device with multiple ports that serves as a central connection point for communication lines from all devices on a network. When data arrives at one port, it is copied to the other ports.
<b>ICS</b>	Acronym for “Internet Connection Sharing.” A software feature in Microsoft Windows that allows computers on a network to access online services through a single Internet connection. Microsoft Broadband Networking hardware replaces software ICS.
<b>infrastructure network</b>	A network configuration in which wireless devices connect to an existing network.
<b>Internet domain</b>	See <b>domain</b> .
<b>IP address</b>	Acronym for “Internet Protocol” address. IP is the protocol within TCP/IP that is used to send data between computers over the Internet. An IP address is an assigned number used to identify a computer that is connected to a network through TCP/IP. An IP address consists of four numbers (each of which can be no greater than 255) separated by periods, such as 192.168.1.1.
<b>ISP</b>	Acronym for “Internet Service Provider.” A company that provides individuals or companies access to the Internet.

<b>LAN</b>	Acronym for “local area network.” A group of computers and other devices dispersed over a relatively limited area (for example, a building) and connected by a communications link that enables any device to interact with any other on the network.
<b>MAC address</b>	Acronym for “media access control” address. The address that is used for communication between network adapters on the same subnet. Each network adapter is manufactured with its own unique MAC address.
<b>Mbps</b>	Abbreviation of “megabits per second.” A unit of bandwidth measurement that defines the speed at which information can be transferred through a network or Ethernet cable. One megabyte is roughly equivalent to eight megabits.
<b>modem</b>	A device that facilitates the transmission and reception of information between computers.
<b>NAT</b>	Acronym for “network address translation.” The process of converting between IP addresses used within a private network and Internet IP addresses. NAT enables all of the computers on a network to share one IP address. The Microsoft Broadband Networking Base Station supports NAT, which provides an extra layer of network security by masking the actual IP addresses of the computers using a base station.
<b>network</b>	A collection of two or more computers that are connected to each other through wired or wireless means. These computers can share access to the Internet and the use of files, printers, and other equipment.
<b>network adapter</b>	Also known as a “network interface card” (NIC). An expansion card or other device used to provide network access to a computer, printer, or other device.
<b>PC Card</b>	A peripheral that adds memory, mass storage, modem capability, or other networking services to portable computers.
<b>peer-to-peer network</b>	Also known as a computer-to-computer network. A network of two or more computers that communicate without using a central server. This lack of reliance upon a server differentiates a peer-to-peer network from a client/server network.
<b>Plug and Play</b>	A set of specifications that allows a computer to automatically detect and configure various peripheral devices, such as monitors, modems, and printers.
<b>port</b>	A physical connection through which data is transferred between a computer and other devices (such as a printer, monitor, or modem), a network, or another computer. Also, a software channel for network communications.

<b>PPPoE</b>	Acronym for “Point-to-Point Protocol over Ethernet.” A specification for connecting users on an Ethernet network to the Internet by using a broadband connection (typically through a DSL modem). Microsoft Broadband Networking hardware supports PPPoE for connections that require it.
<b>protocol</b>	A set of rules that computers use to communicate with each other over a network.
<b>RJ-11 connector</b>	An attachment used to join a telephone line to a device such as a modem.
<b>RJ-45 connector</b>	An attachment found on the ends of all Ethernet cables.
<b>router</b>	See <b>base station</b> .
<b>server</b>	A computer that provides shared resources, such as storage space or processing power, to network users.
<b>shared folder</b>	A folder on a computer that has been made available for other people to use on a network.
<b>shared printer</b>	A printer connected to a computer that has been made available for other people to use on a network.
<b>sharing</b>	To make the resources associated with one computer available to users of other computers on a network.
<b>SSID</b>	Acronym for “Service Set Identifier,” also known as a “wireless network name.” An SSID value uniquely identifies your network and is case sensitive.
<b>static IP address</b>	A permanent Internet address of a computer (assigned by an ISP).
<b>straight-through cable</b>	See <b>Ethernet cable</b> .
<b>subnet</b>	A distinct network that forms part of a larger computer network. Subnets are connected through routers and can use a shared network address to connect to the Internet.
<b>subnet mask</b>	Determines whether two computers on a network can communicate with each other directly. Similar in form to an IP address and typically provided by an ISP. An example of a subnet mask value is 255.255.0.0.
<b>switch</b>	A central device that functions similarly to a hub, forwarding packets to specific ports rather than broadcasting every packet to every port. A switch is more efficient when used within a high volume network.
<b>TCP/IP</b>	Acronym for “Transmission Control Protocol/Internet Protocol.” A networking protocol that allows computers to communicate across interconnected networks and the Internet. Every computer on the Internet communicates using TCP/IP.

<b>USB</b>	Acronym for “universal serial bus.” A hardware standard for easily connecting peripherals to a computer system.
<b>USB adapter</b>	A device that connects to a USB port; the Microsoft Broadband Networking Wireless USB Adapter is a type of USB adapter.
<b>USB connector</b>	The end of the USB cable that is plugged into a USB port.
<b>USB port</b>	A rectangular slot in a computer into which a USB connector is inserted.
<b>WAN</b>	Acronym for “wide area network.” A geographically widespread network that might include many linked local area networks (LANs).
<b>WEP</b>	Acronym for “Wired Equivalent Privacy,” also known as “Wireless Security.” A wireless network encryption mechanism that protects data transmitted over wireless networks. If you are operating a wireless network, it is strongly recommended that you enable WEP.
<b>Wi-Fi</b>	A commonly used term to mean the wireless 802.11b standard.
<b>wireless access point</b>	A device that exchanges data between wireless computers and wired computers on a network.
<b>wireless network name</b>	See <b>SSID</b> .
<b>WLAN</b>	Acronym for “wireless local area network.” A network that exclusively relies upon wireless technology for the device connections.
<b>workgroup</b>	A group of users working on a common project and sharing computer files, typically over a LAN. A user who has a home network that is not being controlled by a domain controller can be a member of a workgroup.





# My Network Settings

Use this page to record your network settings.

Workgroup or domain name: \_\_\_\_\_

Base station password (if applicable): \_\_\_\_\_

## Wide Area Network (WAN) Settings

Complete this section only if your network has a base station (gateway or router). You can obtain this information from your Internet service provider (ISP). Your ISP might not require all of the settings listed below.

### Dynamic IP (DHCP) Settings

Complete this section only if your ISP uses a DHCP connection.

Host name (optional): \_\_\_\_\_

Adapter MAC address (optional): \_\_\_\_\_

### Static IP Address Settings

Complete this section only if your ISP has assigned you a specific IP address.

Static IP address: \_\_\_\_\_

Subnet mask: \_\_\_\_\_

IP gateway address: \_\_\_\_\_

Primary DNS server: \_\_\_\_\_

Secondary DNS server: \_\_\_\_\_

### PPPoE Settings

Complete this section only if your ISP uses PPPoE with your DSL connection.

User name: \_\_\_\_\_

Password: \_\_\_\_\_

Service name (optional): \_\_\_\_\_

